Ridgewood Renewable Power

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Via email: drps@state.ma.us

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Howard B. Bernstein
RPS Program Manager
Massachusetts Division of Energy Resources
100 Cambridge Street
Suite 1020
Boston, MA 02114

RE: **Notice of Inquiry/Final Comments**

Dear Mr. Bernstein:

Ridgewood Renewable Power, LLC ("Ridgewood") hereby submits to the Massachusetts Division of Energy Resources ("DOER") its additional comments to the "Notice of Inquiry" (the "Notice") issued on July 1, 2005 by the DOER and the Massachusetts Department of Environmental Protection ("DEP") relating to the Renewable Energy Portfolio Standard (the "RPS").

Ridgewood, through affiliated entities, owns and operates four generating facilities that currently produce Massachusetts New Renewable Generation Attributes ("Attributes") that qualify for the RPS. Since the RPS was implemented in 2003, Ridgewood entities have made over $20 million in capital expenditures to refurbish existing or construct new RPS qualified generating facilities, and Ridgewood is actively pursuing development of additional projects. To our knowledge, Ridgewood entities are among the very few project developers that have actually closed project a finance loan where the proceeds were used to support generating facilities participating in the RPS.

I. GENERAL COMMENTS

A. THE RPS PROGRAM IS WORKING AS INTENDED.

It is clear to Ridgewood from available data that the RPS is working well and Ridgewood is concerned that wholesale changes to the RPS program as contemplated in the Notice would arrest this remarkable progress. For example, the number of Attributes that were sold pursuant to the RPS program has increased by 26% from 2002 to 2003, by

another 44.3% from 2003 to 2004, and is on a path to increase by another 64.8% in 2005. Such a "ramp rate" is commendable in an industry characterized by large capital expenditures and long lead times for development, and compares very favorably with the rates of success achieved in other jurisdictions.

B. THE PRICE OF AN ATTRIBUTE SHOULD NOT BE THE BASIS FOR REGULATORY CHANGES.

At the Stakeholder Conference there was a fair amount of discussion concerning the costs to ratepayers of the RPS Program and the need to expand the RPS, increase the supply of Attributes, and lower the price. While Ridgewood supports efforts that will enable Attributes to reflect "market" prices precipitously changing the regulations in mid-stream to remove the stoker and pile burn exclusion to ostensibly increase the supply of Attributes will likely do grievously harm the entire RPS program.

The DOER, and other Massachusetts constituents, should realize that the RPS program is an exceedingly modest program when measured as a percentage of overall load. In fact, practically every other state RPS program requires a larger percentage of renewable generation than does the Massachusetts RPS. Given the RPS programs' small percentage requirement, even relatively minor changes in the regulations that affect the supply of Attributes will likely have a significant negative impact on the price. While the price of Attributes is a legitimate concern, it should not be, as some assert, the impetus for regulations that bring supply on more quickly than normal developer responses to such prices. In fact, the RPS program is not costly to Massachusetts ratepayers, especially when compared to the increased costs of generation from natural gas and other fossil-fuels.

For example, using 2005 as an example, if there were no Attributes available to satisfy the RPS requirements, it would result in a total Alternative Compliance Payment of approximately $55,000,000, which represents the highest amount of incentive payments that could conceivably be used to support renewable generation. When that maximum amount is divided over total Massachusetts load, it results in a maximum increase in rates of approximately $.001/Kwh or about one-tenth of one percent. Thus, should the RPS program fail due to an oversupply of Attributes, the renewable generation that would have operated or been developed will likely be replaced by fossil-fueled generation. The corresponding increase in rates caused by the increased use of natural gas fired generation would far exceed the maximum costs of the RPS program.

II. SPECIFIC COMMENTS

A. THE LEGISLATURE INTENDED STOKER TECHNOLOGY TO BE EXCLUDED FROM THE RPS.

1. The Legislature clearly expressed its intent to exclude such technology from the RPS.

With the enactment of the Restructuring Act of 1997, the Massachusetts Legislature authorized, among other things, the development and implementation of the RPS program. The universally accepted purpose of the RPS was to encourage the development of "new" renewable generating resources, which without the incentive provided by the RPS would otherwise be uneconomical to develop. As part of the RPS, the Legislature identified certain renewable technologies that could qualify for the RPS program. The renewable technologies identified by the Legislature is not exhaustive and certain renewable technologies, such as hydro-electric facilities and municipal solid waste facilities were for a variety of reasons, not included. The Legislature clearly made choices among various technologies and DOER cannot override those legislative choices.

The Legislature clearly specified that "Low emission, advanced biomass power conversion technology" is included in the RPS. Although the RPS statute does not specifically define the outer boundaries of low emission, advanced biomass technologies, the Legislature clearly intended stoker and pile burn technologies were not to be included in the definition. Contrary to the DOER's assertion in the Notice, there is no "uncertainty" whether stoker and pile burn technologies are included in the RPS...they are not.

Pursuant to Section 12 of Chapter 25A, the DOER submitted the RPS regulations in final form to the Legislature for its review and approval. The RPS regulations submitted to the Legislature did not include the stoker and pile burn exclusion. As required by Section 12, the RPS regulations were referred to the Joint Committee on Energy ("Joint Committee") for review. The Joint Committee's review was set forth in a report to the DOER dated March 6, 2002. In that report, the Joint Committee recommended to the DOER that stoker and pile burn technologies should be excluded from participation in the RPS because they "have been in use for decades and would not be considered **advanced under any reasonable definition of the term**." (Emphasis added.) In its response to the Joint Committee's report, the DOER accepted the Joint Committee's recommendation without comment and inserted the stoker and pile burn exclusion into the final, promulgated RPS regulations.

Thus, it is clear from the legislative review process described above that the Legislature, acting through the Joint Committee, as required by Section 12 of Chapter 25A, expressed its intent to exclude stoker and pile burn technologies from participation in the RPS program. Although this Joint Committee's report is not statutory language, the Joint Committee's review process of the RPS regulations and report is required by statute. Thus, the report is the only evidence of legislative intent on this issue and can not now be ignored by the DOER when in fact the DOER originally accepted the Legislature's intent on the issue when adopting the RPS regulations.

The Legislature was clear that it did not consider either stoker or pile burn technologies as advanced. Any new advancements or developments that could arguably transform stoker or pile technology into an advanced biomass power conversion technology, as was argued at the Stakeholder Conference, are irrelevant to the determination of what the legislature intended. Notwithstanding any such advancement in

stoker technology, the Legislative intent, as expressed in the Joint Committee's report, was to promote the development of biomass conversion technologies other than stoker and pile burn. The DOER does not have the power to alter that determination.

2. **The DOER's Biomass "Advisory Rulings" do not justify changing the rules to remove the stoker technology exclusion.**

The DOER states that the use of its advisory rulings process has proven useful in that the DOER staff has become more familiar with various power plant options and advancements in biomass power conversion technologies. As noted by the DOER almost all of the advisory rulings provided by the DOER to the date of the Notice involve biomass plants. Of those "biomass" advisory rulings, only one (the Hemphill Advisory Ruling) involved a biomass facility using "stoker" technology that proposed to qualify for the RPS by reducing emissions but yet continuing to utilize stoker technology after retooling or retrofitting. Except for Public Service of New Hampshire (which is converting a coal facility to biomass) and those proposing Greenfield projects, all of the remaining biomass advisory rulings involved the **conversion** of a stoker technology biomass facility to a circulating fluidized bed ("CFB") or bubbling fluidized bed ("BFB") biomass technology. While the conversion (i.e., retrofitting) of an existing stoker biomass facility to a CFB or BFB raises other issues (including vintage and construction and demolition fuel use) it certainly is beyond question that the DOER has the statutory authority to consider in some fashion these "retooled" existing facilities, albeit within the statutory intent of the RPS of promoting "new" renewable resources.

Notwithstanding the existence of only one advisory ruling that proposed to admit a stoker facility into the RPS, the DOER issued the Notice and proposes to remove the stoker exclusion. Not only is this removal beyond the power of the DOER, it is completely unnecessary to address the issues presented by the biomass advisory rulings (except Hemphill). Based upon the "conversion" advisory rulings, these existing stoker facilities seemed perfectly willing to convert to a fluidized bed technology and indeed received an advisory ruling on that basis. Thus, these conversion advisory rulings certainly do not require the DOER to re-write its regulations to remove the stoker exclusion nor do they create uncertainly as to whether a conversion from a stoker technology to CFB or BFB would be deemed eligible to participate in the RPS in some degree and fashion. The DOER's conversion advisory rulings are consistent on that point (although Ridgewood believes they are wrong on vintage issues).

The DOER further states, however, that the advisory ruling process has lead them to conclude that significant advancements in technology have occurred such that "an owner can sometimes improve the efficiency of older biomass plants with stoker combustion through retrofitting...." Again, as stated earlier in Section I.A. above, any advancement to stoker technology is irrelevant as to whether the DOER can admit stoker technology. The Legislature has already concluded that stoker technology is not advanced.

B. ALL EXISTING BIOMASS FACILITIES MUST SATISFY THE VINTAGE REQUIREMENTS OF THE RPS REGULATIONS

1. Existing renewable facilities, regardless of whether they were originally included in the RPS, should participate, if at all, only to the extent of their non-vintage generation

Notwithstanding the results of the DOER's efforts to remove the stoker exclusion, Ridgewood strongly urges the DOER to amend the RPS regulations to overrule its conclusion in the Biomass Guidelines and apply the vintage requirements to any and all existing renewable facilities that may participate in the RPS.

Ridgewood's Indeck Maine Energy facilities are two of only three biomass facilities in New England currently participating in the RPS with a vintage. In the Biomass Guidelines and in the Notice, the DOER proposes to enable existing stoker facilities to retool and/or retrofit and participate in the RPS without a vintage. Indeed, the DOER has issued a Statement of Qualification to Greenville Steam, an existing facility, without a vintage requirement. The DOER's reason for not applying the vintage is that because stoker technology was precluded from participation in the RPS, if a stoker facility retools and/or retrofits and becomes eligible, all of its generation should qualify as new renewable generation for RPS purposes. The DOER's view on this point is wrong because, while it may increase the amount of RPS eligible renewable generation, it does not increase at all the renewable generation in the NEPOOL region.

Notwithstanding disagreement among the participants of the Stakeholder Conference, there appeared to be unanimity that the Legislature intended the RPS to increase the supply of renewable generation from "new" sources. In addition, many of the initial comments filed by various parties cite the legislative history and the DOER's regulatory proceedings to buttress the point. The DOER's current and proposed continuing practice (e.g., Greenville Steam) of qualifying an existing facility without a vintage is directly contrary to such intent. For example, an existing 20 MW stoker facility that would otherwise have a vintage of 160,000 MWh, if allowed full participation in the RPS, does not increase the renewable generation in the region. In addition, given that the Attributes market is limited to a percentage of load, every MW approved for participation necessarily means another MW cannot participate. Thus, as a result of the admission of the existing 20 MW stoker, a proposed "new" 20 MW landfill facility, wind facility or other renewable technology facility likely will not be developed. Unlike this hypothetical stoker, Public Service of New Hampshire's Schiller Station #5 should be permitted to participate in the RPS as a new facility, assuming it complies with air emissions and other criteria, without a vintage. In PSNH's case, it has taken a 45 MW fossil-fueled facility and converted it to a biomass facility. PSNH's transaction has increased the supply of renewable generation in NEPOOL by 45 MW and should be given full RPS credit.

Ridgewood believes that the DOER recognized these facts when it adopted its vintage requirement regulations. Such regulations enabled a facility with "dormant"

generation, as measured by the 1995-1997 period, that otherwise would remain offline, to commence operations under the RPS subject to, however, such facility's historical vintage. The logic behind the vintage requirements is equally applicable to a stoker facility, or any existing renewable facility, that retools to qualify for the RPS. Except for the adoption and application of a "repowering" concept (as explained below), there is absolutely no reason to exempt any existing renewable facility that participates in the RPS from the application of the DOER's vintage requirements.

2. **Existing Facilities Can Avoid the Vintage application by Repowering**

If an existing renewable facility desires to participate in the RPS (assuming the proper technology and other requirements are satisfied) without the application of a vintage, the DOER should allow them to do so, provided the existing facility is repowered. Existing models for this approach exist and are instructive. For example, repowering has been adopted in the California RPS and is currently being considered in Rhode Island as a way in which an existing facility can be deemed new for purposes of the RPS program. In California, in order to qualify as a "repowered" facility, a facility must demonstrate to the California Energy Commission that:

A. The facility's prime generating equipment is new, not used, and that the repowered facility re-entered commercial operations on or after January 1, 2002. For purposes of a biomass facility, prime generating equipment is defined as the "entire boiler" although "stoker boilers may be replaced with boilers using improved stoker technology or fluidized bed technology".

B. The capital investments made to repower must have been made within two (2) years of the date the facility re-entered commercial operations.

C. The value of the capital investments made to repower must equal at least 80 percent of the total value of the repowered facility. The land on which the facility sits is not considered part of the repowered facility for purposes of determining the 80 percent test.

See*, *California Energy Commission Renewables Portfolio Standard Eligibility Guidebook, August 2004.

The State of Rhode Island is currently considering a similar definition. The benefits of adopting a repowering concept are significant and provide advantages over new project development. In a repowering, the developer already has a site, existing fuel and other contractual arrangements, and permits for its operations (if not for the repowering). In such cases, lenders may be more wiling to risk a loan to a developer that is repowering an existing facility than to one proposing a new development. Finally, repowering requires the replacement of the prime generating equipment with new, not used, equipment. This ensures that advanced technologies are used providing all the attendant emission, efficiency and other benefits. Finally, if the DOER adopts a

repowering concept, it would require an amendment in the RPS regulations applying vintage to a site upon which existing generation exists.

3. **Existing facilities would be able to participate in the RPS and in any "existing RPS" that the DOER may develop**

One of the main purposes of the Notice is to sustain and support existing generation that, for a variety of reasons, needs assistance to maintain operations. Ridgewood fully supports such efforts but not if they result in the degradation of the RPS program or provide an unfair advantage to certain existing facilities. Application of the vintage requirements, as noted above, avoids the potentially unfair and inconsistent treatment but may do little, depending on the amount of non-vintage generation, to sustain a particular facility. It is likely that the cost structure of at least some existing facilities will not support operations or retooling/retrofitting if a vintage is applied to their RPS participation. As described above, these facilities can take advantage of repowering (should the DOER adopt the concept) and participate in the RPS without the vintage. However, if this may not be practical for an existing facility and, as a result, the DOER should consider adopting an "Existing RPS."

At the Stakeholder Conference the DOER questioned its regulatory authority to adopt an "Existing RPS". In addition to recommending the stoker exclusion, the Joint Committee on Energy stated in its March 6, 2002 report:

> The "Restructuring act" implies that a standard be set to ensure the use of existing renewable sources in the future. The second sentence in Section 11F of Chapter 25A, subsection states: 'By December 31, 1999, the division shall determine the actual percentage of kilowatt hour sales to end-use customers in the commonwealth, which is derived from existing renewable energy generating sources."
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> While accepting the Division's decision not to set a minimum purchase requirement for existing renewable energy at this time, the Committee wishes to express its firm commitment to maintaining the contribution of existing renewable energy generating sources.

The Joint Committee then directed the DOER to conduct a study to "establish a minimum purchase requirement for existing renewable energy." Ridgewood believes this directive from the Joint Committee as well as the DOER's oversight of the RPS, provides the authority to develop and implement an Existing RPS. Jurisdiction over the RPS for new resources necessarily includes the power and authority to support an existing base of renewable facilities. To do otherwise would thwart the purposes of the RPS. With no sustainable market for existing facilities, the purposes and goals of the new RPS will be frustrated in that as new resources are developed, they will not add to the overall renewable supply but simply displace existing facilities forced offline due to market

conditions. Thus, in order to ensure the success of the new RPS, the DOER should develop and implement an Existing RPS. Ridgewood believes that the implementation of an existing RPS, in conjunction with the ability of an existing facility to participate in the new RPS to the extent of its non-vintage generation, will provide sufficient economic incentives to enable many, but probably not all, existing facilities to continue operations.

C. REQUEST FOR CLARIFICATION REGARDING PROCEDURAL AND LEGAL EFFECT OF THE NOTICE OF INQUIRY

Assuming that the DOER continues with the Notice proceedings, Ridgewood respectfully asks for clarification on the Notice's effect, if any, on advisory rulings issued prior to July 1, 2005 and pending applications for statements of qualification. On page 2 of the Notice, the DOER states as follows:

> [T]he outcome of this two-part process [i.e., the Notice followed by a proposed rulemaking] will not invalidate any Statement of Qualification or Advisory Ruling issued by DOER prior to the publication of this Notice.

The footnotes on page 2 of the Notice provide

> As of the date of issuance of the NOI, there are four Statement of Qualification Applications pending before DOER .... DOER reserves the right to issue or deny Statements of Qualification for these projects pursuant to the existing regulations.
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> ...
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> Advisory Rulings issued prior to the date of publication of this Notice shall remain valid only with respect to those aspects of each Ruling that reference specific fuels, technologies, and emission limits. Advisory Rulings pending but not yet issued as of the date of publication of this Notice will not be issued until promulgation of regulations resulting from the anticipated follow-up rulemaking.

It is not clear to Ridgewood whether DOER is intending to "grandfather" – or freeze in place the existing pre-Notice RPS regulations for – pending/issued advisory rulings and applications for Statements of Qualification submitted prior to the Notice. To the extent that this is DOER's intention, Ridgewood is concerned that such an attempt may be prohibited by law, and will contribute significantly to regulatory instability.

With respect to applications for statements of qualification, the general rule under Massachusetts law is that an agency must follow its existing regulations, even in the face

of contemplated policy or procedural changes, until such time as amendments to regulations have been duly adopted by the agency in accordance with the Massachusetts Administrative Procedures Act (the "APA"). Short of actually obtaining a Statement of Qualification, no applicant can be insulated from changes to the regulations, even with an application pending with the DOER before July 1, 2005. Moreover, it is this concern that leads Ridgewood to believe that more regulatory instability is being generated by the Notice and proposed rule change than the DOER intended.

With respect to advisory rulings, Ridgewood has more general concerns about the use of this administrative tool. The existing RPS regulations distinguish between obtaining an advisory ruling for eligibility -- which requires only a letter request to the DOER -- and an application for a Statement of Qualification, which requires a formalized review of extensive materials. The best explanation of the difference between the two procedures is outlined on the DOER's own website:

> The RPS Regulations at 225 CMR 14.06 (5) provide that the owner or operator of a generation unit may request an advisory ruling from DOER to determine whether the unit would qualify as a New Renewable Generation Unit.
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> The primary purpose of the Advisory Ruling provision is to afford the owner, operator, or developer of an existing, new, or proposed generation unit a means of assessing the likelihood and conditions under which the unit would qualify as a New Renewable Generation Unit under the RPS regulations prior to committing significant investment in time and/or expense for project development. This is especially useful in the case of a biomass unit, for which the RPS regulations include fuel, technology, and air emission criteria that DOER must interpret in its evaluation of each such unit.
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> Note that the actual, formal RPS qualification of a generation unit would be in the form of a Statement of Qualification from DOER. The unit's owner or developer would supply *considerably more and certain detail* in submitting an application for a Statement of Qualification.

Nothing in the current RPS regulations states that an advisory ruling is the functional equivalent of a Statement of Qualification, or even that an advisory ruling is required before an operator may file an application for a Statement of Qualification. Furthermore, nothing in the APA itself or APA jurisprudence suggests that the holder of an advisory ruling obtains vested rights as would be obtained by a Statement of Qualification applicant following issuance of the Statement. As its very name suggests,

an advisory ruling is "advisory" only -- DOER, for instance, only opines on the facts presented by the requesting party, without conducting any independent verification of any evidence set forth in the request. The Statement of Qualification, by contrast, is a formal determination by the Division, after receipt of supporting documentation in an application, that a producer is eligible to sell Attributes. The filing of an application itself does nothing to guarantee Attribute eligibility.

Indeed, the DOER's website and the advisory rulings that have been issued make clear that no Attribute credits can be sold without the operator first obtaining a Statement of Qualification from DOER. The advisory ruling does not purport to vest any rights – each one notes that the DOER "may grant" a Statement of Qualification, contingent upon obtaining other information (e.g., DEP permits), and following all of DOER's applicable regulations, including the Statement of Qualification application. Anyone who relies on an advisory ruling does so at their own risk.

In this vein, and notwithstanding anything that may have been represented to the DOER to the contrary, no reasonable lender would ever provide a commitment for upgrading of a facility purely based on an advisory ruling. For a developer to ultimately demonstrate to a lender that its proposed development will qualify, the developer must apply for and obtain a Statement of Qualification. Only through that process, as opposed to obtaining an advisory ruling or relying on subsequent proposed rule changes, can the DOER provide flesh to the bones of what is "low emission advanced biomass."[1]

Because the primary purpose of the advisory ruling is to clear the way for an operator to file an application for a Statement of Qualification, there is no compelling reason to change the RPS regulations with respect to the status of recipients of advisory rulings while changes to the rules are being contemplated. Ridgewood urges the DOER to instead have the operators who are in receipt of advisory rulings file applications for Statements of Qualification. Once these applications are filed, they can be vetted through the public comment period, provided the DOER provides such public comment, and the DOER can simply rule on whether a particular Statement of Qualification should be issued under existing regulations, and irrespective of the Notice process. In conjunction with our arguments in this section, Ridgewood suggests to the DOER that all future Statement of Qualification applications be noticed and a public comment period provided. Currently, of the 40 Statement of Qualification applications that have been

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[1] Moreover, any attempt to grandfather existing pending or issued advisory rulings would essentially elevate those rulings to the status of Statement of Qualifications (i.e., adjudicatory proceedings). No statutory authority under the APA or Chapter 25A of the General Laws exists for such a change. In fact, such a change would purport to abrogate the common law doctrine of vested rights in Massachusetts without the requisite statutory authority. That common law doctrine states that an applicant for any type of licensing, certificate, or formal approval from a governmental entity has no immunity against a change in the law (be it in the form of an ordinance, a regulation, or a statute) unless (i) the applicant receives the formal approval after following the formal regulatory procedure of the agency; and (ii) takes substantial steps in reliance. The mere filing of an application, or obtaining an advisory ruling / preliminary 'concept' approval, does not create any vested rights in the absence of a statute.

reviewed by the DOER, the public has been given an opportunity to participate via a public hearing on only seven.

Ridgewood raises the aforementioned points concerning the legal status of advisory rulings and applications in mind in part because a grandfathering of advisory ruling holders would prejudice those parties that have obtained Statements of Qualifications after having complete applications reviewed and approved by DOER. Such parties include Ridgewood. Yet by the same token, the DOER should not be freezing existing law for those parties which have filed for advisory rulings purely based on issuance of the Notice. Those advisory ruling applicants have a right under the APA to be told whether the existing regulations allow them to qualify as REC credit suppliers. Moreover, any grandfathering by DOER will invariably affect the rights of parties with and without Statements of Qualification, and should be reconsidered.

D. RIDGEWOOD ANSWERS TO THE QUESTIONS RAISED BY THE DOER

1. The specific improvements to biomass stoker combustion technology include many of the same improvements that are employed by fluidized bed technologies including, but not limited to the following:

- Highly controlled sub-stoichometric reduction (gasification) of the biomass on the stoker grate and in the lower furnace area.
- Improved air distribution systems as indicated by computational fluid dynamic (CFD) modeling.
- Flue gas recirculation (FGR) for temperature and combustion control.
- Continuous monitoring of CO emissions to improve air trim, gasification control and combustion efficiency.

Individually, the above improvements would decrease the emissions or increase the efficiency of biomass stoker combustion. However, they would have to be implemented collectively to meet the more stringent requirements set forth in Tables 2 & 3. Therefore, only the collective application of the above would justify DOER's regarding a newly installed, stoker combustion biomass plant as using "advanced biomass power conversion technology."

2. Net Heat Rate, as defined in Section 2(b) of the Proposed Revisions (with the suggested amendment) is an excellent and well-understood determination of power generation efficiency. However, the Net Heat Rate of biomass-fueled power plants is dramatically affected by the fuel moisture content entering the furnace. It would be easy for an otherwise inefficient combustor to establish a good Net Heat Rate by drying or processing the biomass fuel external to the furnace. The various means of drying and processing biomass fuels carry their own emission load and should be considered in the raw biomass to energy equation. In order to compare the efficiency of one plant Net Heat Rate to another it would be instructive to use standard biomass moisture such as 40% by

weight to determine the "effective" Net Heat Rate. Of course, other biomass proximate analysis parameters have some impact on the Net Heat Rate, but the effects are so minor that they are of little concern.

The above suggested "effective" Net Heat Rate protocol will work for both new and retrofit plants by eliminating the moisture content variable. However, new uninstalled plants and proposed retrofit projects must be evaluated on the guaranteed "effective" Net Heat Rate provided by the manufacturers or retrofit providers. The more difficult determination of "effective" Net Heat Rate will be those plants and projects that include cogeneration as part of the evaluation. There is significant discussion and controversy in the engineering and power generation community as to the correct method of determining the Net Heat Rate of cogeneration facilities. Once the Net Heat Rate protocols for existing, new and retrofit cogeneration facilities are established, they will work for all applications.

The Net Heat Rates shown in Table 1 and the same "effective" Net Heat Rates values are very achievable in advanced, highly efficient technologies that are now commercially available. The Table 1 Net Heat Rates are well proportioned and understandable. No further alternatives are recommended other than using the "effective" Net Heat Rate as suggested above. The "effective" Net Heat Rate is an excellent determinant of "advanced biomass power conversion technologies."

3. Yes, the emission rates specified in Tables 2 and 3 appropriately capture the "low-emissions" criteria that are achievable by "advanced biomass energy conversion technologies." However, the monitoring requirements and measurement criteria should include continuous emission monitoring for all plants above 1 MW_{net} electrical output. Further, it would be instructive if the criteria also required the "effective" Net Heat Rate to be considered along with the "actual" Net Heat Rate. It is likely that something as common as rain or snow, not to mention changes in the fuel source, could change the fuel moisture used in calculating the "actual" Net Heat Rate and affect the emissions accordingly. The "effective" Net Heat Rate calculation allows for better comparison of projected emissions.

The appropriate averaging times for the emission limits should be based on established EPA criteria for biomass and other fuels. All modern new or retooled high technology power production plants over 1 MW_{net} should utilize the same continuous emission monitoring for the same criteria emissions. Ten 1 MW_{net} plants equal a 10 MW_{net} plant, and the smaller plants may have more impact on the local area due to their location and less dispersion from taller stacks.

4. Output based emissions are more effective measures of the environmental impact of power plant emissions than input based emissions. However, it is necessary to use a common standard that eliminates the effect of moisture content in the biomass fuel to fully understand and compare the emission characteristics of individual plants. The actual emissions may be determined from manufacturers and supplier guarantees for a

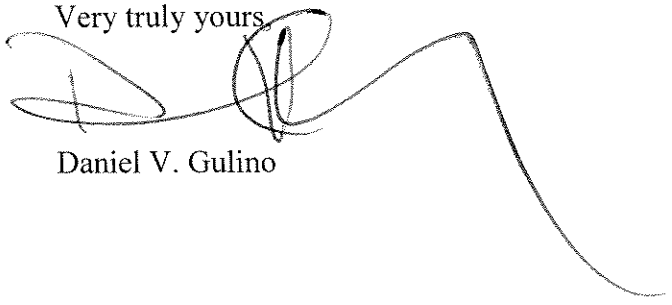
specific biomass fuel and from actual continuous emission monitoring from operating plants.

The challenge is to determine the basis for calculating the actual and "effective" emissions of cogeneration plants with many different configurations. There are many recognized and more proposed methodologies for these calculations. All the methodologies result in different answers to the achievable emissions from biomass fueled cogeneration facilities. It will be necessary for the DOER and the DEP to review and adopt one or more methodologies as a calculation protocol to determine the appropriate achievable emission limits for various configurations of cogeneration power production facilities.

5. The stringency of the "effective" Net Heat Rate emissions standards may be changed over time if the technology improvements warrant. However, it is dangerous to change the standards based on one specific technology that has not had wide application on the type of power production and cogeneration facilities in question. The complex combustion and flue gas constituent reactions found in biomass fueled power production facilities often defeat any prediction of performance even on units that seem very similar. The DOER and DEP must proceed cautiously in adopting a standard that may only be met by one proprietary technology that has not seen widespread application on the advanced biomass power production technologies presently being utilized. Other means of achieving low emissions may be less successful with one emission constituent while being superior over the range of emission constituents for the biomass fuel being utilized.

Ridgewood appreciates the opportunity to submit these comments to the DOER and looks forward to working with the DOER further in its inquiry and rulemaking process. If there is anything further that Ridgewood can do for the DOER, or if there are any questions, please do not hesitate to call.

Very truly yours,



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